

CLAIMS

What is claimed is:

1. 1. A method of determining a clock frequency for a first electronic device and a clock frequency for a second electronic device, the first and second electronic devices being installed in a system with zero or more other electronic devices, the first electronic device being connected to a first bus and the second electronic device being connected to a second bus, the system being capable of executing an application program, the method comprising:
 7. automatically selecting a first clock frequency for the first electronic device and a second clock frequency for the second electronic device, based at least on information about the application program.
1. 2. The method of Claim 1, further comprising supplying a first clock signal having the automatically selected first clock frequency to the first electronic device and supplying a second clock signal having the automatically selected second clock frequency to the second electronic device.
1. 3. The method of Claim 1, further comprising supplying a first clock signal having the automatically selected first clock frequency to the first bus and supplying a second clock signal having the automatically selected second clock frequency to the second bus.
1. 4. The method of Claim 1, wherein the automatically selecting the first and second clock frequencies is further based on information about the first and second electronic devices and the zero or more other electronic devices installed in the system.
1. 5. The method of Claim 1, wherein the information about the application program comprises information about relative loads the application program places on the first and the second devices.
1. 6. The method of Claim 5, wherein the first device is a memory and the second device is an I/O device.

- 1 7. The method of Claim 1, wherein:
 - 2 the first device is a memory and the second device is an I/O device; and
 - 3 the automatically selecting the first and second clock frequencies comprises:
 - 4 if the application program is of a first category:
 - 5 selecting a higher first clock frequency than would otherwise be selected
 - 6 and
 - 7 selecting a lower second clock frequency than would otherwise be
 - 8 selected; and
 - 9 if the application program is of a second category:
 - 10 selecting a higher second clock frequency than would otherwise be
 - 11 selected and
 - 12 selecting a lower first clock frequency than would otherwise be selected.
- 1 8. The method of Claim 7, wherein the first category includes application programs that
2 are expected to be more memory intensive than I/O intensive.
- 1 9. The method of Claim 7, wherein the second category includes application programs
2 that are expected to be more I/O intensive than memory intensive.
- 1 10. The method of Claim 1, wherein the automatically selecting the first and second clock
2 frequencies comprises:
 - 3 if the application program accesses the first device more than the application
 - 4 program accesses the second device:
 - 5 selecting a higher first clock frequency than would otherwise be selected and
 - 6 selecting a lower second clock frequency than would otherwise be selected.
- 1 11. The method of Claim 1, wherein the information about the first and second electronic
2 devices and the zero or more other electronic devices comprises a number of the other
3 electronic devices installed in the system.
- 1 12. The method of Claim 1, wherein the automatically selecting a clock frequency is
2 further based on a thermal budget for the system.
- 1 13. The method of Claim 1, wherein the automatically selecting a clock frequency is
2 further based on a power consumption budget for the system.

- 1 14. The method of Claim 1, further comprising automatically ascertaining at least some of
2 the information about the first and second electronic devices and the zero or more
3 other electronic devices installed in the system.

- 1 15. The method of Claim 14, wherein the automatically ascertaining at least some of the
2 information comprises:
3 querying at least one of the first and second electronic devices; and
4 in response to the querying, receiving information from at least one of the first and
5 second electronic devices.

- 1 16. The method of Claim 14, wherein the automatically ascertaining at least some of the
2 information comprises reading at least a portion of a memory.

- 1 17. The method of Claim 16, wherein the memory comprises a DIP switch.

- 1 18. The method of Claim 1, further comprising ascertaining at least some of the
2 information about the first and second electronic devices through a user interface.

- 1 19. The method of Claim 1, wherein the information about the first and second electronic
2 devices and the zero or more other electronic devices comprises information about an
3 amount of heat at least one of the first and second electronic devices and the zero or
4 more other electronic devices would generate in relation to a clock frequency at which
5 the corresponding at least one of the first and second electronic devices and the zero
6 or more other electronic devices would operate.

- 1 20. The method of Claim 1, wherein at least one of the first and second electronic devices
2 is removably installed in an expansion slot.

- 3 21. The method of Claim 1, wherein at least one of the zero or more other electronic
4 devices is removably installed in an expansion slot.

1 22. An article of manufacture, comprising:

2 a computer-readable medium storing computer-executable instructions capable of
3 determining a clock frequency for a first electronic device and a clock frequency
4 for a second electronic device, the first and second electronic devices being
5 installed in a system with zero or more other electronic devices, the first electronic
6 device being connected to a first bus and the second electronic device being
7 connected to a second bus, the system being capable of executing an application
8 program, comprising:

9 automatically selecting a first clock frequency for the first electronic device
10 and a second clock frequency for the second electronic device, based at least
11 on information about the application program.

1 23. A frequency manager for determining a clock frequency for a first electronic device
2 and a clock frequency for a second electronic device, the first and second electronic
3 devices being installed in a system with zero or more other electronic devices, the first
4 electronic device being connected to a first bus and the second electronic device being
5 connected to a second bus, the system being capable of executing an application
6 program, comprising:

7 a frequency calculator automatically selecting a first clock frequency for the first
8 electronic device and a second clock frequency for the second electronic device,
9 based at least on information about the application program; and
10 an interface connected to the frequency calculator, to a first clock signal generator
11 and to a second clock frequency generator, the interface sending commands:

12 to the first clock signal generator to generate clock signals at the first clock
13 frequency and
14 to the second clock frequency generator to generate clock signals at the second
15 clock frequency.

1 24. The frequency manager of Claim 23, wherein the frequency calculator further bases
2 the automatically selecting a first and second clock frequency on information about
3 the first and second electronic devices and the zero or more other electronic devices
4 installed in the system.

- 1 25. The frequency manager of Claim 23, wherein the information about the application
- 2 program comprises information about relative loads the application program places on
- 3 the first and the second devices.

- 1 26. The frequency manager of Claim 25, wherein the first device is a memory and the
- 2 second device is an I/O device.

- 1 27. The frequency manager of Claim 23, wherein:
 - 2 the first device is a memory and the second device is an I/O device; and
 - 3 if the application program is of a first category:
 - 4 the frequency calculator selects a higher first clock frequency than would
 - 5 otherwise be selected and the frequency calculator selects a lower second
 - 6 clock frequency than would otherwise be selected; and
 - 7 if the application program is of a second category:
 - 8 the frequency calculator selects a higher second clock frequency than would
 - 9 otherwise be selected and the frequency calculator selects a lower first clock
 - 10 frequency than would otherwise be selected.

- 1 28. The frequency manager of Claim 27, wherein the first category includes application
- 2 programs that are expected to be more memory intensive than I/O intensive.

- 1 29. The frequency manager of Claim 27, wherein the second category includes
- 2 application programs that are expected to be more I/O intensive than memory
- 3 intensive.

- 1 30. The frequency manager of Claim 23, wherein the information about the first and
- 2 second electronic devices and the zero or more other electronic devices comprises a
- 3 number of the other electronic devices installed in the system.

- 1 31. The frequency manager of Claim 23, wherein the frequency calculator further bases
- 2 the automatically selecting a first and second clock frequency on a thermal budget for
- 3 the system.

- 1 32. The frequency manager of Claim 23, wherein the frequency calculator further bases
- 2 the automatically selecting a first and second clock frequency on a power
- 3 consumption budget for the system.

- 1 33. The frequency manager of Claim 23, further comprising an information input
- 2 automatically ascertaining at least some of the information about the first and second
- 3 electronic devices.

- 1 34. The frequency manager of Claim 33, wherein the information input queries at least
- 2 one of the first and second electronic devices to ascertain the at least some of the
- 3 information about the first and second electronic devices.

- 1 35. The frequency manager of Claim 33, further comprising a memory storing at least
- 2 some of the information about the first and second electronic devices.

- 1 36. The frequency manager of Claim 35, wherein the memory comprises a DIP switch.

- 1 37. The frequency manager of Claim 23, further comprising a user interface, by which the
- 2 frequency manager can ascertain at least some of the information about the first and
- 3 second electronic devices.

- 1 38. The frequency manager of Claim 23, wherein the information about the first and
- 2 second electronic devices and the zero or more other electronic devices comprises
- 3 information about an amount of heat at least one of the first and second electronic
- 4 devices and the zero or more other electronic devices would generate in relation to a
- 5 clock frequency at which the corresponding at least one of the first and second
- 6 electronic devices and the zero or more other electronic devices would operate.

- 1 39. The frequency manager of Claim 23, wherein at least one of the first and second
- 2 electronic devices is removably installed in an expansion slot.

- 1 40. The frequency manager of Claim 23, wherein at least one of the zero or more other
- 2 electronic devices is removably installed in an expansion slot.